

Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application.

Listing of Claims:

1. (Currently amended) A method for producing a xanthophyll from a photosynthetic microalga, comprising:

a growth step ~~of inoculating a~~ wherein an encysted photosynthetic microalga containing a xanthophyll is inoculated into a nutrient medium ~~to grow and grown the photosynthetic microalga;~~ and

an encystment step ~~of encysting~~ wherein the grown microalga obtained in the growth step is encysted.

2. (Canceled)

3. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the growth step and the encystment step are performed in a same culture tank.

4. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the growth step and the encystment step are performed using a low nutrient medium, wherein the concentration of nitrogen source in the low nutrient medium is at least 0.02 g/L and less than 0.15 g/L expressed in terms of nitrogen.

5. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the growth step and the encystment step are performed by batch culture.

6. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the nutrient medium for the growth step and the nutrient medium for the encystment step are performed independently using different media from each other.

7. (Original) The method of claim 6, wherein the growth step and the encystment step are performed independently by batch culture.

8. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the growth step and the encystment step are performed under ~~light~~ irradiation with light.

9. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the microalga is a green alga belonging to the genus *Haematococcus*.

10. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the green alga is *Haematococcus pluvialis*.

11. (Currently amended) The method of claim 1 ~~or~~ 2, wherein the xanthophyll is astaxanthin.

12.: Canceled.

13. (New) A xanthophyll-rich photosynthetic microalga cell having a plurality of zoospores containing a xanthophyll, wherein the xanthophyll-rich microalga cell is obtained by culture of an encysted microalga cell, and the xanthophyll content in the xanthophyll-rich microalgal cell is higher than the xanthophyll content of a microalga cell obtained by culture of a non-encysted microalga cell.